Emeryville Traffic Signal with Railroad Preemption

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Location: Union Pacific Railroad At-Grade Crossing on 65th Street
65th Street / Shellmound Street / Overland Avenue

- Traffic Signal designed in 2002 in conjunction with the Overland Avenue Street extension.
- A mitigation requirement for a 325 unit housing development.
- Traffic Signal Funding: 50% Developer
  50% City

Project Team

- City of Emeryville
- Opus West, Developer of Housing project
- Korve Engineering, Traffic Signal Design
- MCH, Traffic Signal Contractor
- Kimley Horn and Associates, Timing Plans and design of railroad preemption interface.
- Republic Electric, setup of traffic signal for railroad preemption and initial start-up.

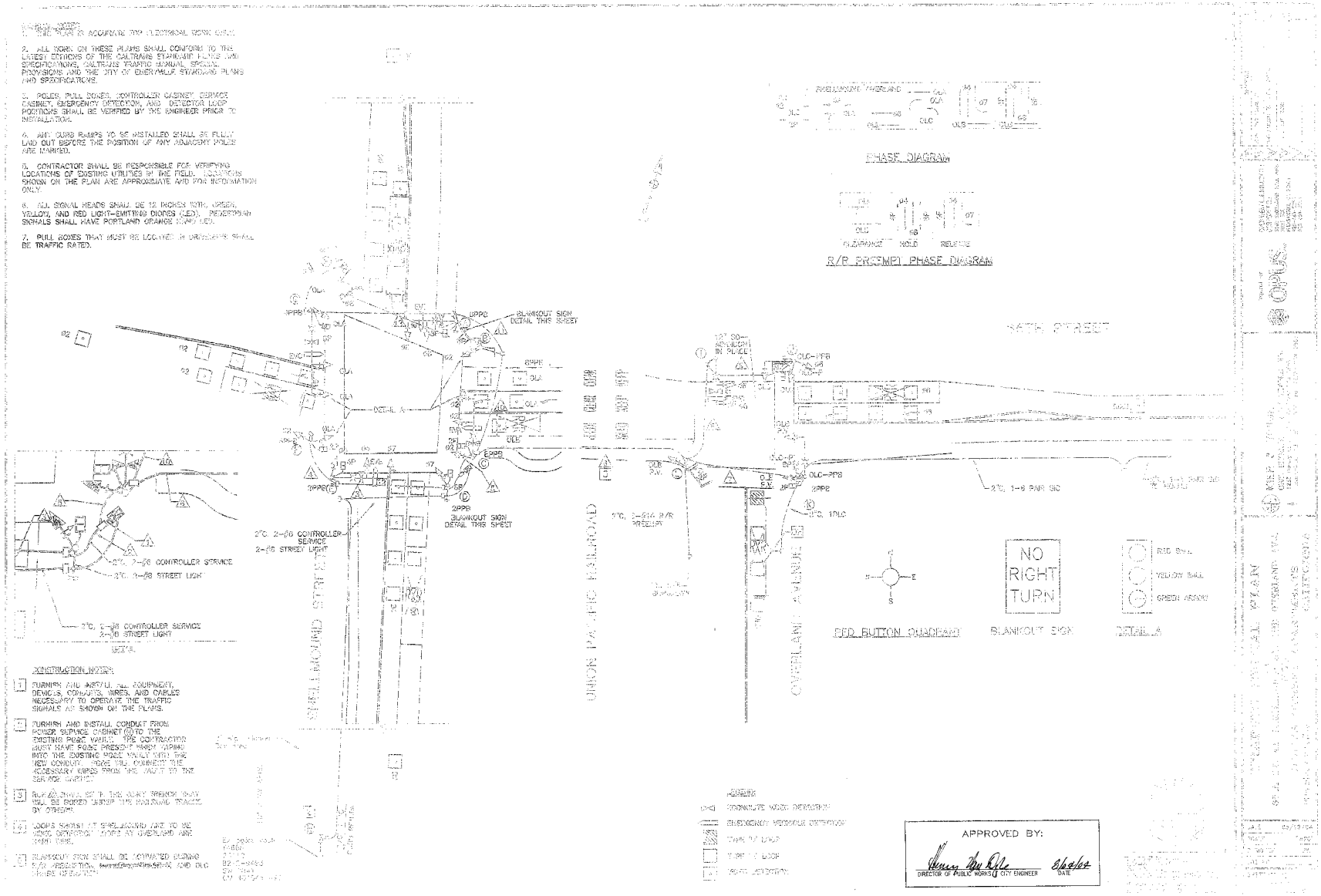
At-Grade Crossing Details:

- 2 Main Line Tracks
- 1 Storage Tracks
- Amtrak Station located 2200 feet south of at-grade crossing.
- Additional at-grade crossings to the north at 66th and 67th Streets.

Traffic Signal Design Details:

- 2 Intersections, one on each side of the at-grade crossing.
- 1 Traffic Controller (Model 170 E controller in a 332 Cabinet)
- Video Detection on Shellmound Street and on 65th Street.
- Phase Diagram selected that provides the most safety for vehicles crossing the tracks.

- Engineer's Estimate: $300,000 plus cost for Railroad Preemption


PHASE DIAGRAM
R/R PREEMPT PHASE DIAGRAM
SHELLMOUND STREET
UNION PACIFIC RAILROAD
OVERLAND AVENUE
66TH STREET
NO RIGHT TURN
APPROVED BY:
DIRECTOR OF PUBLIC WORKS / CITY ENGINEER
DATE
File Number 3161

Views of Project Intersections

- A PUC at-grade crossing permit amendment was required for the street extension and the traffic signal. Request was submitted to PUC in December 2002. Their issues were:

- Add a median island near the new intersection of 65th Street and Overland Avenue
- Add a railroad signal lamp to the crossing aimed at Overland Avenue.
- Provide a Letter of Concurrence for the improvements from the UPRR.

- UPRR did not have any issues with the proposed improvements.
- However, UPRR would not provide a Letter of Concurrence to the PUC until the City agreed to pay 100% of the cost to install a railroad signal preemption system.
- UPRR could not provide a cost estimate until a preliminary design was prepared at their headquarters in Omaha.
- In late 2003, an estimate was received in the amount of $716,000.

Options considered by City:

- Install Stop Signs
- Try to Negotiate with the Railroad

- UPRR claims that cost could be reduced if the preemption time could be reduced to 25 seconds.
- Traffic Engineer's requirements for preemption time is 35 seconds.

  (Not possible to reduce)

- After one year of deliberating, decision was made to move forward.
- Developer was given approval to construct the new Traffic Signal and to place bags over all the heads until ready to activate.

- A Preemption Agreement executed with the UPRR in September 2004.
- Agreement obligates the City to pay 100% of the actual cost for UPRR to design and construct the preemption system.
- After signing the agreement, UPRR informed the City that the cost estimate is over one year old and has increased to $780,000.

- UPRR sent Letter of Concurrence to PUC and approval were received from PUC by November 2004.
- UPRR hired a consultant to prepare the detailed design.
- The design required an upgrade to all their signal houses for 3 at-grade crossings in Emeryville and 1 located 4900 feet to the north in Berkeley at Bancroft Way.
- The design also required a new railroad signal house south of the Amtrak Station.

- UPRR orders all the equipment. Given that there is only one railroad signal equipment manufacturer in the country the equipment took about one year to deliver.

- UPRR began construction of preemption system in December 2005.

- UPRR informed the City that their system can be tested at the end of March 2006.

- In March 2006 UPRR informed the City that 6 wires for the preemption are needed from the traffic signal controller to the railroad signal house.
- The 6 wires are needed to accommodate the new railroad signal equipment and the new PUC requirements.
- The older preemption systems only required 2 wires.

- The PUC now requires the railroad signal equipment to hold the track clearance phase on the traffic signal until the railroad gate is raised.

- The railroad signal equipment now communicates the following to the Traffic Controller:

  First preemption signal to start the track clearance phase.

  Second preemption signal when the railroad gate is lowered. This signal starts the hold phase and allows for a limited operation of the traffic signal.

  Third preemption signal when gate is raised. This signal starts the release phase.

- Standard 170 Controller and 332 Cabinet is set up to process one signal per call.
- The new PUC Rules require special programming of Bitrans local 233 software and an additional isolation card.

- In March 2006, City tested traffic signal functions and imputed timing plans to prepare for turn-on.

- UPRR delayed turn-on due to construction complications.

- In April 2006, UPRR informs the City that there is a major flaw in their design.
- Designers did not take into account the trains that stop at the Amtrak Station.
- Trains that begin moving after a complete stop enter the grade crossing before the preemption clearance cycle is completed.
- UPRR sent plans back to Omaha for further design and has provided no schedule for completion.

- Invoices continue to accumulate. Total received to date: **$950,000**

- UPRR developed a solution to their design flaw.
- They plan to issue a General Order to Train Operators requiring operators of all trains that stop near the grade crossing to dial a special code on a wireless transmitter.
- Transmitter is Standard Equipment on all trains.
- A wireless receiver hardware needed at the 65th Street railroad signal house.

Project Status:

- UPRR still working on the language for the General Order.
- Wireless receiver equipment still on order.
- Schedule for turn on still unknown.
- Cost Estimate for traffic signal to-date

$300,000	Traffic Signal
$950,000	Railroad Preemption
$1,250,000	

In the Newspaper

Chronicle Watch — *Working for a better Bay Area*

UPDATE: DAY 114

Slow progress for Emeryville signals: A timing glitch has delayed activation of new traffic lights at a pair of intersections straddling the city's railroad tracks. ChronicleWatch first reported on lights on 65th Street at Overland Avenue and Shellmound Street in February, after tipster Ben Brooks said the new equipment had never been turned on. The lights were installed more than a year ago, the Emeryville resident said, but were still covered with fabric. Traffic got so backed up at Shellmound, he said, that frustrated drivers "blew right through the stop signs, probably due to the covered lights." Emeryville Public Works Director Hank Van Dyke said the traffic and pedestrian signals were part of a new residential development project. He said activation of the lights required coordination with railroad engineers and that Union Pacific crews would have it done by April. But this week, Van Dyke told us railroad crews discovered a timing problem that could cause motorists to be trapped on the tracks after warning barriers signaling that a train is approaching are lowered. Van Dyke wasn't sure when railroad crews would solve the problem. He added that the signals are now flashing red at the Shellmound intersection. "The flashing lights help, and they also re-striped some of the lanes," said tipster Brooks. "It's certainly better than it was." — *Suzanne Pullen*

Who's responsible: Hank Van Dyke, Emeryville public works director, (510) 596-4300; *hvan-dyke@ci.emeryville.ca.us*

ON THE WATCH LIST

DAY 15 More than a dozen street lamps along S.F.'s Doyle Drive have gone dark. Caltrans to begin fix this month.

Who's responsible: Bijan Sartipi, Caltrans District 4 director, (510) 286-5900; *bijan_sartipi@dot.ca.gov*

DAY 581 City and property owners finalizing plans for blocked pathways in S.F.'s Ingleside district.

Who's looking into it: Sean Elsbernd, San Francisco's District 7 supervisor, (415) 554-6516; *sean.elsbernd@sf.gov.org*

Is something broken in your neighborhood? Call us at (415) 777-7170 or e-mail us at *chroniclewatch@sfchronicle.com*. To follow items featured in ChronicleWatch, go to www.sfgate.com